R E P O R T R E S U M E S

ED 015 910 24 TE 000 210

THE THEORY OF DEEP STRUCTURE. LANGUAGE CURRICULUM V, STUDENT VERSION.

BY- KITZHABER, ALBERT R.
OREGON UNIV., EUGENE

REPORT NUMBER CRP-H-149-77
REPORT NUMBER BR-5-0366-77
CONTRACT OEC-5-10-319
EDRS PRICE MF-$0.25 HC-$0.96 22P.

DESCRIPTORS- *DEEP STRUCTURE, *ENGLISH CURRICULUM, *ENGLISH INSTRUCTION, *INSTRUCTIONAL MATERIALS, *TRANSFORMATION GENERATIVE GRAMMAR, DESCRIPTIVE LINGUISTICS, GRADE 11, GRAMMAR, LANGUAGE, NOMINALS, PHRASE STRUCTURE, SENTENCE STRUCTURE, SYNTAX, TRANSFORMATION THEORY (LANGUAGE), EUGENE, OREGON CURRICULUM STUDY CENTER, PROJECT ENGLISH

AN EXPLANATION OF THE THEORY OF DEEP STRUCTURE AS IT SERVES TO DESCRIBE THE ENGLISH LANGUAGE SIMPLY, CONSISTENTLY, AND COMPLETELY CONSTITUTES THIS LANGUAGE UNIT FOR 11TH-GRADERS. PRESUPPOSING THE STUDENT'S KNOWLEDGE OF PHRASE STRUCTURE AND TRANSFORMATION RULES, THE CONCEPT OF DEEP STRUCTURE IS ILLUSTRATED IN THE IMPERATIVE AND PASSIVE SENTENCE FORMS, AND EXERCISES ARE PROVIDED FOR STUDENT PRACTICE IN NOTING THE DERIVATIONS OF AND THE RELATIONSHIPS AMONG SUCH SENTENCES. BRIEF SECTIONS DEAL WITH NOMINALIZATIONS, AMBIGUITIES, AND DELETIONS IN THE THEORY OF DEEP STRUCTURE. SEE ALSO ED 010 129 THROUGH ED 010 160, ED 010 803 THROUGH ED 010 832, TE 000 195 THROUGH TE 000 220, AND TE 000 227 THROUGH TE 000 249. (RD)

ED015910

TE000 210

OREGON CURRICULUM STUDY CENTER

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

THE THEORY OF DEEP STRUCTURE

Language V

Student Version

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Albert R. Kitzhaber
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

The project reported herein was supported through the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare.

Student Version

The Theory of Deep Structure

Throughout his entire history, man has been trying to understand his environment and himself. The desire to understand and to explain is an inborn characteristic of mankind. If you have any contact with young children you know that much of their conversation consists of questions, and most of their questions are "Why?" and "What?" They learn about the world they live in and are able to adjust to it by asking for explanations about it.

Why does it rain?

Why do we have to stop at red lights?

What is that funny thing?

Why does soap make bubbles?

Why does an airplane fly?

Why do we sleep?

There is no end to a child's questions. And most of them are questions by which he seeks an understanding or an explanation of the world he lives in.

What is true of children is true of all of the human race. From the time he emerged from the cave, man has been asking questions. In fact, one reason he was able to emerge from the cave and build an ever more complicated civilization was that he was curious about the world he lived in. Primitive man probably wondered, for example, what would happen if he used some circular object, such as a cross section of a tree, to propel other objects and thus eventually furnish a means of transportation. He must have wondered what fire was and how he could use it. The answers to these questions led to more difficult questions, to deeper understanding, and to more complex life. Finally man asked questions not only about how the objects of the world he lived in behaved, but also about why they behaved the way they do. He asked what matter consisted of. He wondered why, when two substances combined, they reacted in strange ways, why oil and water wouldn't mix, why there were earthquakes and volcanic eruptions, why objects fall, why people are sometimes sick, why plants and animals grow, why people behave the way they do. Such questions led man to the world we know today. His long years of asking about the nature of matter led finally to the theory of the atom and from there to his ability to split the atom and to create new elements. His questions about the nature of the human body and its behavior led to understanding and finally to the marvels of modern medicine. His inquiry into the various aspects of life has followed in general the same path. First he questioned; then he tried to describe what he saw; then he tried to explain it. This is the path of science.

An interesting aspect of most scientific inquiries, as they become more and more complex, is that oftentimes the explanation of what man can see lies in what he cannot see. For example, we cannot see an atom. We can't actually observe how atoms behave, how they combine, what their structure is. All that we can observe is the results of this behavior. We can't see the atoms and molecules of hydrogen and oxygen which combine to form water, but every time we take a bath or drink a glass of water we use the results of that chemical combination. Scientists have had to develop theories about things they can't see, on the basis of things they can observe. If the theory is right it will predict results which are consistent with the things which can be observed. The theory of the atom is such a theory. Though scientists could not see atoms, they developed a theory about what matter is composed of and how the atoms behave. They reasoned that if the theory was right, certain procedures should enable man to split the atom, and they predicted the outcome. When they carried on the procedures, the outcome which they had predicted was verified. This was evidence that their theory had been right. Of course, this has only led them to ask other questions, which eventually will lead to new knowledge. This is the nature of scientific inquiry.

Discussion question: Can you think of other examples in which man has explained things he can't actually observe on the basis of what he can observe?

You may ask what this discussion has to do with language, the subject you are now studying. The answer, of course, is that language is a very important part of man's behavior and it is also something that he has asked questions about for a long time. It seems reasonable that he should question the ability which enables him to ask questions in the first place--his ability to use language. So man has wondered "How did language begin?" "What was the first language?" "Why are there different languages?" "In what ways are they alike?" "How does man learn a language?" and "What is the nature of language?" In recent years students have been approaching the study of language in the same way that scientists have approached the study of other aspects of man's nature and environment, as something that can be observed, described accurately, and explained. Linguists are scientists of language. They are interested in finding out, among other things, what it is man knows that enables him to learn and use a language--to create sentences indefinitely and to understand sentences he has never heard before. We can't see the mental processes that go on in the human mind, but we have a clue to them in language. Language furnishes us some evidence of the concepts man has and of the complexity of his thought.

A grammar is an attempt to describe a language. There have been various kinds of grammars through the years, but each in its own way has tried to describe what man could observe about the elements of language and how they go together. Some grammars have given us more accurate and more complete descriptions than others. We might say that some have been more adequate than others.

What should a grammar do? Why do people write grammars and why do students study grammar? If a grammar is adequate it will help us answer many questions about language. And it may do more. Just as the attempt to describe matter led to knowledge of the atom and eventually to the useful discoveries of modern chemistry; just as man's interest in how the body works and how cells grow has led to cures for many diseases; in time perhaps the accurate study of language will lead to a better use of language and to better human communication. It may lead to a deeper understanding of how the human mind works. But before this can happen man must learn to describe language adequately. He must learn to explain it and understand it. How can this be done? One way is to develop a theory about language and then to test it out as theories about other kinds of knowledge are tested. A transformational grammar represents a theory about language.

A requirement for any satisfactory theory about any subject is that it be as simple as possible, that it account for as many of the observable facts as possible, and that its parts be consistent with each other. A scientific theory that could account for the fact that most objects fall but can't account for the fact that some float in the air would not be very complete or very consistent. Both of these facts must somehow be accounted for and related in a satisfactory theory. A satisfactory grammar about language must also be simple, complete, and consistent. It must account for all the grammatical sentences of the language and must exclude the ungrammatical ones. And it must do so as simply as possible.

What is it that an adequate grammar must describe and explain? We all share a certain kind of knowledge of our language. We are able to produce sentences to express ourselves and we can understand the sentences we hear. This is a kind of knowledge that any native speaker of a language has. It has little to do with his intelligence or with his education. Education and intelligence may determine what use a person puts this knowledge to, but the ability to speak a language and to understand it is something that all people have. Whatever it is that man knows about his language that enables him to use it is called his linguistic competence. It is a built-in or internalized knowledge of his own language. It is what enables a speaker of English to recognize that

Soft snow fell all night

is an English sentence and to understand what it means. This same competence is what tells him that

Night all fell snow soft

is not an English sentence and that it means little or nothing as it now stands. This internalized or built-in competence is what a grammar tries to explain.

What do speakers of English know about the following pair of sentences?

(1) John got down the skis.
(2) John got down the mountain.

Here are two sentences which look as if they have the same structure. They even share many of the same words. But none of us would interpret them in the same way. Any speaker of English knows that in (1) John gets the skis down from someplace and that in (2) John gets himself down the mountain. Even though this difference is not apparent on the surface of the sentences, that is how we interpret them. We are, in other words, aware of something that isn't apparent on the surface of the sentences.

How do speakers of English interpret the following pair of sentences which seem at first to have the same structure?

(3) Carrie is delighted to help.
(4) Carrie is difficult to help.

Most speakers of English would be aware that these sentences are different, though they might not be able to explain how they knew it. Somehow we are all aware that in (3) Carrie helps someone but that in (4) Someone helps Carrie. There is nothing on the surface to indicate this difference. Again, as speakers of English we are aware of something besides what is apparent on the surface. Our competence is what gives us this awareness.

We can find many examples of sentences in which speakers of English understand much that isn't apparent on the surface. Any speaker of English, even a child of five, knows that

(5) Sit in the corner.

really means

(6) You sit in the corner.

although there is nothing in (5) to give us that information. And we all know that in the following

(7) The boss gave George an assistant.
(8) The boss made George an assistant.

the relation between George and assistant is very different, although the two sentences on the surface look the same. We all know that in (7) George and the assistant are different people, but (8) is ambiguous. George and the assistant can be understood to be the same person. But George and the assistant may refer to different people. When understood this way the boss seems like a Frankenstein who can manufacture monsters and therefore made one as a helper for George.

We all know that the following sentences are synonymous.

(9) The boys ate the pizza.
(10) The pizza was eaten by the boys.

Our competence (our built-in knowledge of the language) is what enables us to make this interpretation, although <u>how</u> we do it isn't obvious from the sentences themselves.

And it is our competence which tells us that

(11) Cheating teachers may be dangerous.

has two meanings, depending on whether the teachers cheat someone or whether someone cheats the teachers.

Discussion question: Think of other examples of sentences which are alike on the surface but interpreted differently.

The speakers of a language, then, have some kind of knowledge of what isn't apparent on the surface of the sentences they hear. They may not understand what it is that they know. They can only see the results of it in the sentences they speak and the sentences they hear. We might say they have a feeling of a deep (or hidden) structure of the sentences of the language even though they are not aware of it. It is this kind of knowledge which a really adequate grammar tries to explain.

As students of language you have learned something about the grammar of your language. You have learned that sentences have a structure and you have learned what that structure is for many sentences. You have learned to recognize various categories and constructions that make up your language--the nouns, verbs, adjectives, adverbials, noun phrases, verb phrases, etc. And you have learned something about how these various elements are related. In other words you have some tools for talking about the sentences of your language. Most of you can make structural descriptions of many sentences. You can draw diagrams showing the structure and can write strings of symbols which stand for sentences. As you know, much of what you have learned has been concerned with describing the underlying structure. For instance, you know that underlying

(12) The crazy kid ran into the street.

are two basic sentences:

The kid ran into the street.
The kid was crazy.

And you have been given a means of describing how the two combine (or are transformed) to form sentence (12). This kind of description is a part of the grammar of your language. Can this grammar explain our linguistic competence?

What can grammar tell us about the hidden or deep structure of which we can be made aware? Let's begin with the imperative. Can it offer any explanation for why normal speakers of English when they hear

Finish the assignment.

will interpret this as a command addressed to themselves, so that they assume that it means You finish the assignment. Even though you does not appear in the spoken sentence we know that you is implied, and not he or they, for instance. What evidence do we have, other than our intuition, that you exists in the deep structure? How does it happen that we are able to supply you? Some comparisons may help us answer these questions.

Reflexive pronouns (words like himself, herself, themselves, etc.) are often added to sentences in which they substitute for an NP occurring earlier.

Joe hurt himself.

Can your little sister dress herself?

In each case the reflexive is related to an earlier NP (himself to Joe; herself to sister). What reflexive would you add to

Finish the assignment _____.

Although you doesn't occur in the surface structure, the fact that the only reflexives possible are yourself or yourselves is evidence of a you in the underlying or deep structure.

Another bit of evidence is furnished by the tag question, which you remember is a question added to the end of a sentence. Tag questions consist of the subject and part of the auxiliary of the sentence they are added to, and not is often made a part of the tag also.

He has written the article, hasn't he? (pres + has + not + he)

She is baking the cookies, isn't she? (pres + be + not + she)

The cat chased its tail, didn't it? (past + do + not + it)

What tag question would you add to

Finish the assignment _____.

There are two possibilities and both include will and you. Though these two words don't exist in Finish the assignment, the fact that they do occur in the tag is evidence that they exist in the underlying or deep structure.

These examples give us evidence about deep structure from related sentences of the language. What can a grammar add to this evidence?

A complete, accurate and economical grammar of English would have to show us the structure not only of

Finish the assignment

but also of

Finish the assignment yourself.

Don't finish the assignment.

Finish the assignment, won't you.(or will you).

Do finish the assignment.

etc.

and should also show how they are related.

An important principle for developing any scientific theory is that the right explanation will be the simplest. So we will begin by assuming that all the forms of the imperative derive from the same underlying (or deep) structure and see if their differences can be accounted for by different transformations. The underlying sentences would have to consist of

Imp + you + pres + will + (not) + verb (in this case--finish the assignment.)

Imp, you remember, is a symbol by which we show that the sentence is Imperative. If we start with this underlying sentence string, a series of transformations can lead us to the various forms of the imperative.

1. The transformation which reverses the subject NP and part of the auxiliary (sometimes called T_Q) gives us

   Will you finish the assignment?

   or Won't you finish the assignment? (if the optional not is chosen)

2. But if the end product is to be an imperative, other transformations are necessary. A transformation which deletes will leaves an unattached tense, requiring the addition of do. This transformation gives us

   Do you finish the assignment. (This is not yet imperative because either do or you must be deleted here, even though they can remain in the negative.)

   or Don't you finish the assignment. (For some people this may be either imperative or a question.)

   (Do can be deleted from the positive at this point. Some speakers of English say You finish the assignment.)

3. The deletion of you gives us the more common imperatives:

   Do finish the assignment.

   or Don't finish the assignment.

4. And the deletion of do in the positive (if it hasn't been deleted earlier) gives us the very common

   Finish the assignment.

In terms of a grammar, then, finding that all these different forms of the imperative can be derived from the same underlying sentence gives us independent evidence that they are related, and that there is a deep structure which includes you and will. This is an explanation of our intuition. It explains why we all understand that these elements are part of the imperative. Saying that Finish the assignment means You finish the assignment shows that we interpret (or find the meaning) in the deep structure.

It is important to realize that at the beginning we started only with an assumption. The assumption was made because it was the simplest explanation which could be made--that we feel the various forms of the imperative are related because they are all derived from the same underlying structure. The simplest explanation turns out to be the one that works. In addition it gives evidence for why we feel the imperative contains you and that the various forms are related.

What can a grammar tell us about the deep structure of the passive?

You have seen that in discovering rules to explain the deep structure of the imperative we looked for the simplest explanation we could find. This is a principle which any scientific theory goes by. So, in trying to write rules for the formation of the passive, let's also look for the simplest explanation that will account for all of the facts. (Remember that the theory must also be consistent with all the facts). The place to begin then is with the things which must be accounted for. First the grammar must be able to show how the following sentences are derived:

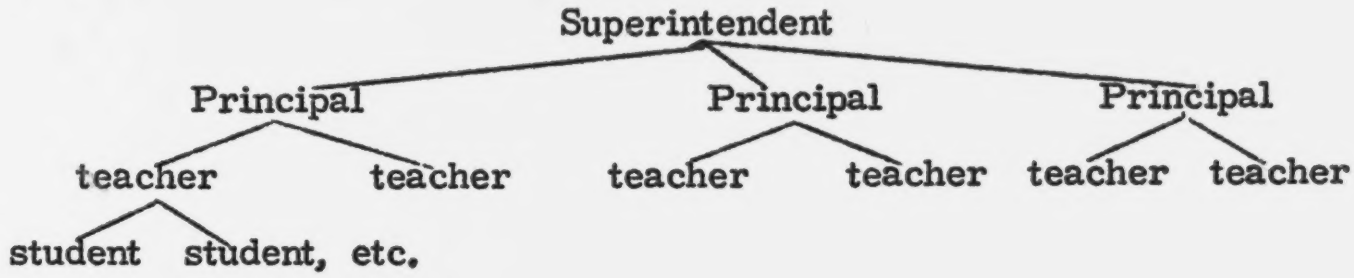
(13) The boys drank the milk.

(14) The milk was drunk by the boys.

It must also show why we all feel that these two sentences are synonymous. Are phrase structure rules adequate for the job? Look at sentence (13) first. Although you have been using phrase structure rules for several years you may not have thought about what they can tell you about the structure of a sentence.

Exercise: Write the Phrase Structure Rules which are needed to account for the structure underlying sentence (13). Then make the branching diagram which represents this structure.

What do these rules and this diagram tell you about the sentence? They describe what might be called the deep structure of the sentence. For instance they show that the organization of the sentence is a hierarchy of relations. This means that the parts of a sentence can be ranked. Beginning with the whole, S, the first basic cut in the sentence divides it into the parts which together make up the whole. In turn each of these parts can be divided into smaller units. The larger units are said to rank higher than the smaller. The sentence, since it is the major unit, ranks highest. This kind of organization is known as a hierarchy. We can find examples of it in many places. In a school system, for instance, the superintendent ranks highest. He is in charge of the principals, who are in charge of the teachers, who are in charge of the students. We could show this kind of hierarchy on a diagram.



Similarly the diagram of a sentence also represents a hierarchy. It shows that the first NP is on the same level in the structure of the sentence as VP. They both branch off of S. Another way to say it is that they are both dominated by S. Together they make up S. We will make use of the symbol $NP_{[S]}$ to show this relation. $NP_{[S]}$ means that NP is dominated by S. How would you show that VP is also dominated by S?

On the other hand, the diagram shows very clearly that the second NP (the milk) is on a level with the V_{tr} (drink). Together they form a unit dominated by Verb. In the hierarchy of the sentence they are on a lower level. $NP_{[S]}$ is one of the two basic parts of the sentence. $NP_{[V]}$ is only one part of the verb phrase. $NP_{[S]}$ is what is called the subject of the sentence. $NP_{[V]}$ is often called the direct object of the verb. The rules and diagram show how they are related in the hierarchy of the sentence. When you use the word subject you mean the NP which is immediately dominated by S in the base sentence. When you use the term direct object you mean the NP dominated by Verb in the base sentence. These are relations in the deep structure. They explain the relation between boys and drink and between drank and milk.

But the grammar must also explain why we feel that these same relations exist in

The milk was drunk by the boys.

You will recognize this as a passive sentence. You have learned to account for the passive as a transformation of the active, but you may not have thought about why it is accounted for in this way. Why not simply account for the passive by means of phrase structure rules?

Let's think for a moment of what the phrase structure would have to include to account for the sentence. As our rules stand now, they permit sentences like

*The milk drank the boys.

A complete grammar would have to have rules which would account for the fact that this is not a normal sentence of English. What kind of rules would we need? In sentences with transitive verbs like drink, what kind of noun must serve as the subject NP ($NP_{[S]}$)? What restriction must there be on the direct object NP ($NP_{[V]}$)? What kind of rules would we need to provide for these restrictions?

One rule would have to say: Nouns before verbs like drink must be animate.

Another would say: Nouns occurring after verbs like drink must be inanimate.

Such rules are sometimes known as context-sensitive rules. They describe the context in which certain kinds of words can occur. Now, if the passive is to be explained in the phrase structure rules, what rules would we need to prevent passive sentences like the following?

*The boys have been drunk by the milk.

What is the relation between the rules for the passive and those for the active? Would you agree that the four sentences we have been discussing are related in the following way?

The boys drank the milk	is to	The milk was drunk by the boys.
as		
*The milk drank the boys	is to	*The boys were drunk by the milk.

It seems then that if we account for the passive in the phrase structure, every rule that must be applied to the active requires a reverse rule to apply to its related passive. But is this the simplest way to account for the 2? Does it give us a way to show why we consider them synonymous?

Exercise: Write the active sentences which are related to the following passives and then be prepared to discuss the questions which follow.

1. Many elk were killed by hunters last winter.
2. The fountain was paid for by the senior class.
3. The rally squad is appointed by the student council.
4. Mistakes are caused by carelessness.
5. A meeting has been called by the president.
6. Ice cream will be furnished by the teachers.

Questions:

1. Does every passive have a related active?

2. How does the form of the passive differ from the form of its corresponding active?

3. Is it possible to write a transformation rule to show this relation? How would you do it?

Exercise: Match the sentences which are related because they are synonymous. Then write context sensitive rules for the the actives which would have to be reversed for the passives. Finally be prepared to discuss the questions at the end.

1. The city has built a tall building.
2. Joe's motorcycle was hit by a car.
3. The class play was written by one of the teachers.
4. Our dog has been stung by a bee.
5. A car had hit Joe's motorcycle.
6. A tall building has been built by the city.
7. A bee has stung our dog.
8. One of the teachers wrote the class play.
9. Joe's motorcycle had been hit by a car.
10. Joe's motorcycle hit a car.

Questions:

1. If the passive is shown as a transformation of the active, could any of the context sensitive rules be eliminated? Which ones? Why?

2. How many rules would be needed to show that nouns before transitive verbs like drink in the active have the same characteristics as nouns after drink + by in the corresponding passive?

3. From the standpoint of economy which is preferable as a means of accounting for the passive--phrase structure or transformation? Why?

What can we conclude? It seems to be more economical to show that the passive is a transformation of the active than to write separate phrase structure rules to account for each. When we do this, moreover, we discover that we have found a way to show how the active and its passive are related. We have evidence that they are derived from the same underlying basic structure. Whenever we have a verb that requires an animate subject, we start with an animate noun in that position, even though this noun may end up as object of by, after the transformation. Thus we say that "He found it" underlies "It was found by him." The restrictions on the subject NP ($NP_{[S]}$) and the direct object NP ($NP_{[V]}$)

hold in reverse for the passive. This indicates that the passive is just another way of developing the basic structure which underlies the active and that the active tells us something about the deep structure of the passive.

The surface structure of the language consists of the sentences we hear and speak, read and write (e.g., The boys drank the milk and The milk was drunk by the boys.) We want to explain these sentences by the grammar. The simplest way to do it turns out to be a transformation. But in looking for the most economical way of explaining the facts we can observe, we find that we have also explained the relation we intuitively feel about actives and passives. The deep structure of the language shows the relations which we feel must exist beneath the surface, for instance the relations between the boy and drink and drink and milk in the sentences we have used as examples. Though the active and passive look different on the surface we understand them in the same way, and what we understand can be explained as the relations of the deep structure. The boy is the subject and the milk is the direct object in the deep structure. This relation holds even in the passive, although the surface structure of the two is very different.

Speakers of the language interpret the meaning of sentences from their deep structure. This is why we feel that the two sentences (active and passive) are synonymous. The theory of transformations gives a formal explanation for something which we know intuitively.

The tree diagrams of underlying sentences represent the deep structure.

Exercise: By means of tree diagrams show the deep structure of the following sentences:

1. Stop at the light.
2. An assembly has been scheduled by the principal.
3. Don't step in the puddle.
4. The students made acid in the lab.
5. The boss gave George an assistant.
6. The boss made George an assistant.

Other evidences of deep structure. What can the theory of deep structure tell us about these sentences?

(3) Carrie is delighted to help.
(4) Carrie is difficult to help.

A casual glance might indicate that they are sentences of the same kind, but most of us feel intuitively that they are different, and that we don't interpret them in the same way. What evidence in language itself can we find that they are indeed sentences of different kinds? We will look first at other sentences to which they are related.

In each of the following columns check the sentences which are related to the sentence above the column.

A	B
Carrie is delighted to help.	Carrie is difficult to help.
1. Carrie is delighted to be able to help.	1. Carrie is difficult to be able to help.
2. Carrie is delighted that she can help.	2. Carrie is difficult that she can help.
3. To help Carrie is delighted.	3. To help Carrie is difficult.
4. It is delighted to help Carrie.	4. It is difficult to help Carrie.
5. Helping Carrie is delighted.	5. Helping Carrie is difficult.

Notice that each sentence is related to different kinds of sentences. Carrie is delighted to help is related to sentences which have the form of 1 and 2, whereas Carrie is difficult to help is related only to sentences of the form of 3, 4, and 5. This shows us that they are not alike.

The sentences that we are examining are alike in their surface structure. Each consists of an NP plus be plus an adjective followed by an infinitive (to + verb). We discover that they are different when we compare the kinds of sentences to which they are related.

An adequate grammar must show the relationship between Carrie is delighted to help and Carrie is delighted that she can help. This last sentence helps us to find out what the deep structure is. In

Carrie is delighted that she can help.

what does she replace? What is the relationship between Carrie and the verb help in this sentence? This relationship means that the deep structure must contain the underlying sentences

Carrie is delighted.

and

Carrie helps.

The derived adjective delighted is one which permits another sentence to be embedded, either as a that clause or as an infinitive whose $NP_{[S]}$ has been deleted.

Carrie is delighted that she can help.
Carrie is delighted to help.

Now, let's examine the sentences related to

Carrie is difficult to help.

From them we can discover the parts that must be in the deep structure. In each of the sentences related to Carrie is difficult to help we find the

remnants of a sentence with the verb help followed by Carrie.

To help Carrie is difficult.
It is difficult to help Carrie.
Helping Carrie is difficult.

What is the relation between help and Carrie in these sentences? What has been deleted? Since all of these are related to Carrie is difficult to help we can conclude that they have the same underlying structure, and we find that in that structure the relation between Carrie and help is one of verb to its direct object ($NP_{[V]}$). On the other hand we have found that in Carrie is delighted to help, the relation between Carrie and help is one of subject ($NP_{[S]}$) to the verb. This difference in the underlying, or deep structure, explains how we are able to interpret the two in different ways. The relations of the deep structure still hold in the surface.

Exercise: In the following sentences match those where the deep structure is most similar.

1. Is Jessie at home?
2. Girls are crazy about boys.
3. Who is afraid?
4. Who is crazy about girls?
5. Is The Lilies of the Field a good movie?
6. America is my home.
7. What is Jessica's home like?
8. Men and lions are afraid.
9. The Lilies of the Field is the name of a book.
10. Jessica's home is like a mansion.
11. Men are afraid of lions.
12. Jessica is at home.
13. Are girls crazy about boys?
14. Lions are afraid of men.
15. The Lilies of the Field is the name of the movie.
16. Boys are crazy about girls.
17. The Lilies of the Field is a good movie.
18. What is the name of the movie?

Sentences that have more than one base sentence in their deep structure must be represented on more than one diagram, one for each of the underlying sentences.

Exercise: Show the deep structure of the following sentences.

1. Close the door.
2. The candle was glittering in the room.
3. Jeremy rolled the blinds down.
4. Moby Dick was a white whale.
5. The lemonade was supreme.
6. The wine was tasted by the old man.
7. The bird had magnificent plumage.
8. The bird and the snake played games.
9. The scene frightened Ellen.

10. Do you have a pencil?
11. Geralding and Marie became nurses.
12. What is the name of the movie?
13. The old gossip gave me a pain in the neck.
14. The teacher called him a nuisance.
15. The swallow flew toward Capistrano.
16. The old lady who could not hear was run over by the truckdriver who could not see.
17. The cat that killed the mouse chased the rat that swallowed the canary that ate the goldfish.
18. How did you finish these tiresome exercises?

Review of Embedding

In preparation for the next section, you need to be reminded of the relative embedding transformation, which you are of course very familiar with, since it is involved in the derivation of so many parts of our language. You recall that one sentence may be embedded in another if the two have identical NP's. In some cases parts of the embedded sentence may be deleted, and other parts can be moved to a position before the NP. Study the following examples just to refresh your memory:

1. The storm toppled many trees.
   The storm blew in from the coast. } ⟹ The storm which blew in from the coast toppled many trees.

2. I recognized the man.
   The man was buying a ticket. } ⟹ I recognized the man who was buying a ticket. ⟹
   I recognized the man buying a ticket.

3. I hit the tricycle.
   The child has a tricycle. } ⟹ I hit the tricycle which the child has. ⟹
   I hit the tricycle the child has. ⟹
   I hit the child's tricycle.

4. The boys were smashing the car.
   The car was on the lot. } ⟹ The boys were smashing the car which was on the lot. ⟹
   The boys were smashing the car on the lot.

5. We heard a story.
   The story was fascinating. } ⟹ We heard a story which was fascinating. ⟹ We heard a fascinating story.

(fascinating itself is derived from
The story fascinated someone. ⟹
The story was fascinating to someone. ⟹
The story was fascinating.)

6. The inspector observed the chimneys.
   The chimneys were smoking. } ⟹ The inspector observed the chimneys which were smoking. ⟹ The inspector observed the smoking chimneys.

7. The audience applauded the speaker.
   The audience was amused. } ⟹ The audience which was amused applauded the speaker. ⟹ The amused audience applauded the speaker.

(amused is derived from
The speaker amused the audience. ⟹
The audience was amused by the speaker. ⟹
The audience was amused.)

8. We are going fishing at the time.
   He comes home at the time. } ⟹ We are going fishing at the time at which he comes home. ⟹ We are going fishing at the time he comes home. ⟹ We are going fishing when he comes home.

You should also remember that some sentences are embedded as complements in the VP as well as in an NP.

9. We saw (comp) the fish.
   The fish were leaping in the water. } ⟹ We saw leaping in the water the fish. ⟹ We saw the fish leaping in the water.

A brief look at nominalizations: You will need to be aware of another kind of transformation before you begin the next section. In English there is a very common process (or transformation) by which an S is nominalized. This means that it becomes the kind of construction than can appear as an NP. There are various kinds of nominalizations, but we will mention only a very few and will not specify the details of the formation. One kind

involves changing sentences with transitive verbs and direct objects ($NP_{[V]}$) into NP's for other sentences.

For example: Someone picks beans. ⟹

For someone to pick beans ⟹ to pick beans. or the picking of beans. or picking beans.

The transformed construction can then appear as an NP in another sentence.

<u>Picking beans</u> is hard work.

Other examples are

catching fish	fighting fire
climbing mountains	getting votes
driving cars	picking cotton
washing dishes	mowing lawns
cutting hair	painting signs.

Eash of these can appear as an NP in another sentence. Notice that in each derived NP the relation of the verb to the noun is the same as it was in the sentence from which they were derived.

The sentence underlying many of these nominalizations can be transformed in another way so that the direct object becomes a modifier and the verb becomes a nominal, one which refers to the doer of an action.

For example: Someone <u>picks beans</u> ⟹ Someone is a <u>bean picker.</u>

. . . wash dishes	⟹	. . . dish washer.
. . . climb mountains.	⟹	. . . mountain climber.
. . . fight fire.	⟹	. . . fire fighter.
. . . get votes.	⟹	. . . vote getter.
. . . pick cotton.	⟹	. . . cotton picker.
. . . mow lawns.	⟹	. . . lawn mower.
. . . paint signs.	⟹	. . . sign painter.

Another kind of nominalization involves a base sentence with an intransitive verb in which the subject and verb form a nominalization.

For example:		
People stare.	⟹	the staring of people
Babies cry.	⟹	the crying of babies
Bombs explode.	⟹	the exploding of bombs
Birds chirp.	⟹	the chirping of birds
Dogs whine.	⟹	the whining of dogs
Geese cackle.	⟹	the cackling of geese

Any one of these can appear as an NP in another sentence.

I heard the <u>cackling of geese.</u>

There is a great variety of nominals in English, and there are of course restrictions on what can become a nominal and upon what kind it becomes. It is interesting to try to find how many kinds there might be and exactly how they might be derived. But for the purposes of this unit you do not need to know the exact process. What is important is to see what base sentence such nominalizations derive from and to be aware of the syntactic relations that existed in this base sentence. You may want to keep your eyes open for other examples than the ones we mentioned.

Exercise: Try to figure out what sentences exist in the deep structure of the following.

1. He is a good story teller.
2. The treasure hunter had a map.
3. This hour is for story telling.
4. Getting votes is his business.
5. We were wakened by the crowing of roosters.
6. Jack was a sign painter.
7. Fire watchers are needed in the summer.

Ambiguity and Deep Structure.

The following notice on a school bulletin board caused great hilarity among the students reading it. Can you see why? Can you explain the source of the amusement?

The Girls' League has discarded uniforms
and invites you to look them over.

The sentence is humorous because it is ambiguous. An ambiguous sentence is one which has two or more meanings. You may have found such sentences puzzling; or perhaps you have found them amusing, like the one above. But you have probably had trouble explaining why a sentence can mean two things. Take the following sentence.

Teasing girls can be fun.

How many meanings can it have? If you interpret it one way you may say that it means that

Someone teases girls.

and It can be fun.

You are able to say this because you are aware intuitively that these base sentences exist in the deep structure. The relationship between tease and girls is the relationship of a verb and its direct object. A transformation has changed the underlying sentence into the nominalization teasing girls and embedded it as a complement to It, which is then deleted. But

the relationship of teasing and girls is the same as the relation of teases and girl in the deep structure.

If you happened to interpret the sentence in another way, what two sentences would you be thinking of in the deep structure? What is the relationship between girls and teasing in this second interpretation? What would be the steps in the transformation to produce the surface sentence?

Whenever a sentence has more than one meaning it can be explained by showing that it has more than one derivation. That is, in the deep structure there were either different base sentences or there were different transformations which resulted in the same surface structure. Being able to explain the deep structure of a sentence gives us the means of explaining ambiguity. The deep structure of an ambiguous sentence must be represented in as many ways as there are interpretations of the sentence. There are many kinds of ambiguity. We will work with only a few.

Exercise: A. Pick out the sentences in which you see an ambiguity and explain it by showing the deep structure of each meaning you attach to the sentence.

1. He bought a beautiful woman's purse.
2. I smell fresh peach pie.
3. We saw the young bird watchers.
4. They feature handsome men's suits.
5. Mrs. Cox found old ladies' hats at the rummage sale.
6. In the window was an old wine bottle.

In what way are the ambiguities in the sentences related?

B.
1. The football team received directions for the game in the locker room.
2. He painted the mural in the basement.
3. Old Joe hobbled after the dog with a broken leg.
4. She wore a wig in the play which caused raised eyebrows.
5. The coach read a story in a book which is delightful.
6. The guards were told to stop the noise at night.

C.
1. The principal looked over the plant.
2. Adam looked up the Washington Monument on his trip to Washington.
3. Daphne wore her shirt out.
4. Joe turned up the magazine.

D.
1. Cheating teachers can be dangerous.
2. The shooting of hunters in Africa is frightening.
3. They are entertaining girls.
4. Growing flowers kept Grandfather busy.
5. Ringing bells amused the children.

Deletion

In all of the examples we have worked with in this unit, we have been able to look at the surface structure of sentences (the ones we see and hear, speak and write) and to figure out what was in the deep structure. We have looked at imperatives like Be quiet and have said that this means You be quiet. We have found evidence to show us that our intuition is right. But the fact that you, and all speakers of English, can supply parts of sentences that aren't in the surface structure, shows that these parts do exist in the deep structure.

The fact that parts of the deep structure do not appear in the surface structure is explained in the grammar by a process called deletion. What kinds of constructions can be deleted from the deep structure? We can supply an NP for

Be quiet.

Can we supply an NP for the following?

has been quiet.

We have no way of deciding what the NP might be.

When we find a sentence like

The car was wrecked by George.

we have all the pieces for reconstructing the underlying sentence.

George wrecked the car.

But when we find a sentence like

The boat has been sold.

we know only that it is passive (by the be + en) but we lack one piece for reconstructing it. In this event we must assume the underlying sentence contained some indefinite $NP_{[S]}$ and in talking about it we supply the indefinite someone. (Someone has sold the boat.)

We can reconstruct the deep structure from the surface only if we have the proper clues. But the interesting thing about language is that nothing ever seems to be missing from the surface structure of grammatical sentences which we are not able to reconstruct from clues that we find in the language itself. This is why sentences like

has been quiet

do not occur, unless, perhaps, as tag answers to a question that contains an NP that can be reconstructed to supply the missing subject. This has led linguists, when they are writing rules which describe the deep structure and the transformations which change deep to surface structure, to assume

that only those elements can be deleted which can be reconstructed.

I loved the food grandmother cooked.

Can you put back into this sentence the words which have been deleted? We know that there is a related sentence I loved the food which (or that) grandmother cooked. From the evidence in the sentence we know that which or that replaces the food. This leads us to the fact that in the deep structure there must have been two base sentences:

I loved the food.

Grandmother cooked the food.

Show by supplying elements which have been deleted what the deep structure of the following might be:

1. The foreman gave him a raise.
2. The girl I knew in Chicago is a model.
3. The police caught him stealing.
4. The child frightened by the storm hid his head.
5. The audience applauded when he appeared.

We can't supply parts that don't exist in the deep structure. But when we can supply missing parts unambiguously we know that a rule has operated which allows the deletion of only those parts of the deep structure that can be reconstructed from the surface structure. The fact that we are able to supply them is an indication of the elements which exist in the deep structure and of what can be deleted.

E N D

DEPT. OF HEALTH

EDUCATION AND

WELFARE

U.S. OFFICE OF

EDUCATION

E R I C

DATE FILMED

6-21-68